

**IN THE CLAIMS:**

1. (Currently Amended) Method for detecting leaks in respiratory gas supply systems, in which both the pressure of the respiratory gas and the volume flow of the respiratory gas are detected and fed into an evaluation unit, wherein the respiratory quantities pressure and flow are recorded by the evaluation unit for at least two successive respiratory cycles, that at least one control parameter with different signal amplitudes is preset for the successive respiratory cycles, and that resistance, compliance, and leak resistance are determined ~~from the resulting by a computation based on~~ differential curves of pressure and flow for these respiratory cycles.

2. (Previously presented) Method in accordance with Claim 1, wherein the computation is performed for at least two immediately successive respiratory cycles.

3. (Previously presented) Method in accordance with Claim 1, wherein the computation is performed for at least two respiratory cycles that are separated by at least one other respiratory cycle.

4. (Currently amended) Method in accordance with Claim 1, wherein ~~different~~ first and second pressure levels are preset for the successive inspirations.

5. (Previously presented) Method in accordance with Claim 4, wherein the first pressure level is selected higher than the second pressure level.

6. (Previously presented) Method in accordance with Claim 4, wherein the first pressure level is selected lower than the second pressure level.

7. (Currently amended) Method in accordance with Claim 1, wherein ~~different~~ first and second volume flows are preset for the successive respiratory cycles.

8. (Previously presented) Method in accordance with Claim 7, wherein the first volume flow is preset higher than the second volume flow.

9. (Previously presented) Method in accordance with Claim 7, wherein the first volume flow is preset lower than the second volume flow.

10. (Previously presented) Method in accordance with Claim 1, wherein a large number of respiratory cycles, each with a varied control parameter, are carried out in such a way that the values of the control parameters are statistically distributed in such a way that a mean value corresponds to a preset desired value for the control parameter.

11. (Previously presented) Method in accordance with Claim 1, wherein a leak compensation is carried out.

12. (Previously presented) Method in accordance with Claim 11, wherein the leak compensation is carried out dynamically.

13. (Currently amended) Method in accordance with Claim 1, wherein a determination of the spontaneous respiratory behavior is performed by the evaluation unit (14).

14. (Currently amended) Method in accordance with Claim 1, wherein the evaluation unit (14) compensates the effects of spontaneous respiratory behavior ~~on the ventilation~~.

15. (Previously presented) Method in accordance with Claim 1, wherein leak detection is carried out in an area between a ventilator (7) and a patient (13).

16. (Currently amended) Method in accordance with Claim 1, wherein the measurements are carried out only during inspiratory phases of the respiratory cycles.

17. (Currently amended) Device for detecting leaks in respiratory gas supply systems, ~~which has both comprising~~ a device for detecting the pressure of a respiratory gas and a device for detecting the volume flow of the respiratory gas, and ~~in which wherein~~ the detection devices are connected to an evaluation unit, wherein the evaluation unit (14) is ~~designed~~ configured to determine the respiratory quantities pressure and flow, ~~that further comprising~~ a storage device ~~is provided~~ for at least one pair of value sequences of pressure and flow for a respiratory cycle, and ~~that means for generating~~ at least one

differential sequence ~~can be generated~~ for determining differential curves of compliance and resistance for at least two successive respiratory cycles.

18. (Previously presented) Device in accordance with Claim 17, wherein at least one pressure sensor (8) is connected to the evaluation unit (14).

19. (Previously presented) Device in accordance with Claim 17, wherein at least one volume flow sensor (9) is connected to the evaluation unit (14).

20. (Previously presented) Device in accordance with Claim 17, wherein at least one of the sensors (7, 8) is arranged so that it faces a ventilator (7) that is supplying the respiratory gas.

21. (Previously presented) Device in accordance with Claim 17, wherein one of the sensors (8, 9) is arranged so that it faces a ventilation mask (12).

22. (Previously presented) Device in accordance with Claim 17, wherein an expiration valve (11) is arranged so that it faces the ventilation mask (12).

23. (Previously presented) Device in accordance with Claim 17, wherein a discharge system (27) is arranged so that it faces the ventilation mask (12).

24. (Previously presented) Device in accordance with Claim 17, wherein a discharge system (27) is arranged so that it faces the ventilator (7).

25. (Previously presented) Device in accordance with Claim 17, wherein an expiration valve (11) is arranged so that it faces the ventilator (7).

26. (Previously presented) Device in accordance with Claim 17, wherein a patient interface that is connected with the ventilator (7) by the respiratory gas hose (10) is designed as an invasive device.

27. (Currently amended) Device in accordance with Claim 17, wherein a patient interface that is connected with the ventilator (7) by the respiratory gas hose (10) is ~~designed as~~ a noninvasive device.

28. (Previously presented) Device in accordance with Claim 17, wherein the evaluation unit (14) has an amplitude generator for a pressure that varies from respiratory cycle to respiratory cycle.

29. (Previously presented) Device in accordance with Claim 17, wherein the evaluation unit (14) has an amplitude generator for a volume flow that varies from respiratory cycle to respiratory cycle.